Pastel
3107

Network Working Group

Request for Comment: 110

NIC # 5809

March 25, 1971

Joel M. Winett
MIT Lincoln Laboratory

Conventions for Using an IBM 2741 Terminal as a User Console for Access to Network Server Hosts

This material has not been reviewed for public release and is intended only for use with the ARPA network. It should not be quoted or cited in any publication not related to the ARPA network.

TO: NIC

FROM: Joel M. Winett (LL)

SUBJECT: Conventions for Using an IBM 2741 Terminal as a User Console for Access to Network Server Hosts

An IBM 2741 terminal can be used to key in 92 different codes. These include 88 graphics plus the 4 controls SP, BS, HT, and NL. Each of these have defined ASCII codes except the cents graphic (¢) and the New Line Control (NL). When the NL character is keyed, the program receiving the keyboard input can translate this signal into the appropriate line end signal for the host which is being used. That is, to a NL, CR, or LF code whichever is appropriate. There are 7 other ASCII graphic characters ({, }, [,], ^, \, `) and 31 other ASCII controls which cannot be keyed on a 2741 terminal. A convention must be established so that all 128 ASCII codes can be keyed from a 2741 terminal. This requires that one character be chosen as an escape (or prefix) character which, together with following characters, can be converted into any desired ASCII code. In addition to this escape character, there are three other functions which are usually indicated by the typing of a single character key. These are:

a) character delete--to cause this character and the preceding character in the input line to be deleted.

b) line delete--to cause this character and all previous characters in the current input line to be deleted.

c) logical line end--to cause all characters keyed after the last logical line end character or last NL character up to this character to be considered as one logical line with this character being treated as if the NL key were entered. Characters following the logical line end character up to another logical line end character or a NL character are used for form another input line.

Since characters keyed are normally sent to the Server Host, a method must be defined to allow characters keyed to be interpreted by the user program. A system escape character can be used for this purpose. On character at a time systems, the characters keyed between two system escape characters can be interpreted by the user program. On line at a time systems, characters keyed after the system escape character and up to and including a NL character can be interpreted by the user program. Lines interpreted by the user program are not sent to the Server Host.

For those host systems which require use of the INS or INR network control commands, a method must be defined for causing these commands to be sent. These can be sent on a command to the user program either after keying the system escape character or through the use of the 'attention' button on a 2741 terminal. This choice will depend on the characteristics of the terminal user's operating system.

Other commands to the user program might be to:

a) suppress typeout of received messages

b) restore typeout of received messages

c) direct received message to a disk file

d) direct keyed input to a disk file

e) abort the user program

The following characters are recommended for the special functions listed above:

1.	character escape	¬
2.	system escape	|
3.	character delete	@
4.	line delete	¢
5.	logical linend	#

For the 7 ASCII graphics not on a 2741 terminal, the following character escape and graphic pairs are recommended:

¬ <	to translate to	[
¬ >	to translate to	]
¬ (	to translate to	{
¬)	to translate to	}
¬ "	to translate to	^
¬ /	to translate to	\
¬ '	to translate to	`

To permit the special function characters to be keyed, the following character escape and graphic pairs are recommended:

¬ -	to translate to	¬
¬ :	to translate to	|
¬ ,	to translate to	@
¬ .	to translate to	¢
¬ =	to translate to	#

To key in the ASCII control codes, it is recommended that the character escape followed by two letters be used to specify a control code. The two letters are derived from the mnemonic name of the ASCII control function and are as follows:

¬ AC	to translate to	ACK	X'06'
¬ BE	to translate to	BEL	X'07'
¬ BS	to translate to	BS	X'08'
¬ CA	to translate to	CAN	X'18'
¬ CR	to translate to	CR	X'0D'
¬ D1	to translate to	DC1	X'11'
¬ D2	to translate to	DC2	X'12'
¬ D3	to translate to	DC3	X'13'
¬ D4	to translate to	DC4	X'14'
¬ DE	to translate to	DEL	X'7F'
¬ DL	to translate to	DLE	X'10'
¬ EM	to translate to	EM	X'19'
¬ EN	to translate to	ENQ	X'05'
¬ EO	to translate to	EOT	X'04'

(continued)

	ES	to translate to	ESC	X'1B'
	EB	to translate to	ETB	X'17'
	EX	to translate to	ETX	X'03'
	FF	to translate to	FF	X'0C'
	FS	to translate to	FS	X'1C'
	GS	to translate to	GS	X'1D'
	HT	to translate to	HT	X'09'
	LF	to translate to	LF	X'0A'
	NA	to translate to	NAK	X'15'
	NU	to translate to	NUL	X'00'
	RS	to translate to	RS	X'1E'
	SI	to translate to	SI	X'0F'
	SO	to translate to	SO	X'0E'
	SH	to translate to	SOH	X'01'
	SP	to translate to	SP	X'20'
	ST	to translate to	STX	X'02'
	SU	to translate to	SUB	X'1A'
	SY	to translate to	SYN	X'16'
	US	to translate to	US	X'1F'
	VT	to translate to	VT	X'0B'

Note that the controls SP, BS, and HT can be specified using the character escape character or directly by keying the appropriate key on a 2741 terminal.

Joel M. Winett

JMW:sa